

REMARKS

The acknowledgment of the claim for foreign priority under 35 U.S.C. §119 and receipt of the priority document is noted with appreciation.

The acknowledgment of Applicant's election without traverse of Group 1, claims 1-21, is noted with appreciation. Non-elected claims 22-31 have been canceled without prejudice or disclaimer.

Claim 1 has been amended to recite that the solid composition layer has a predetermined protrusion or groove surface profile on a surface thereof. This terminology is used throughout the specification. Claim 1 has also been amended to specify that the solid composition layer is resin. Specific support for this can be found on page 24, at line 7, and examples of the various materials are found throughout the specification. New claims 32 and 33 have been added. Specific support for the spherical, conical or angular conical profiles can be found on page 30 at the third line from the bottom, and specific support for the linear and curved slits, as well as the concentric circles and lattices can be found on page 31 at lines 1-4.

The specification has been amended in several locations to correct spelling and grammatical errors. No new matter has been introduced.

The Examiner has requested claim 20 to be corrected because the phrase "the predetermined surface profile" lacks antecedent basis. However, claim 20 does not refer to the phrase "the predetermined surface profile" in its description. Applicant assumes that the Examiner is referring to claim 21, which describes "the predetermined surface profile" to function as a transmission grating, Fresnel lens or microlens array. Moreover, claim 21 is dependent on claim 1, which originally recited "a predetermined surface profile" on the surface of a composition layer. Claim 21 has been amended to reflect the changes made in claim 1.

Claims 1-21 and 31-32 are currently pending in the application.

Claims 1-7, 16-18, 20 and 21 have been rejected as being anticipated by U.S. Patent 6,582,826 to Goto et al. Claims 8-15 and 19 have been rejected as being unpatentable over

Goto. Each of these rejections is traversed in view of the amendments above and the remarks below.

At the outset, it should be understood that the invention is concerned with a optical device that includes a surface with protrusions or grooves thereon. As can be seen from Figures 1A-1D and Figure 2, the composition layer is shaped (for exemplary purposes, these are shown as bulbuous protrusions). With reference to the example and comparative example presented at pages 37 and 40 et seq., it has been discovered that a microlens array can be reliably produced using the described methods and materials. That is, data is presented showing that the microlens array of the present invention (e.g., shrinkage of the film in the present invention was about 2% (page 39) while it was 6% with the comparator (page 41); the diameter of the condensed spot of every convex lens of the present invention was not larger than 3 μ m before and after moisture testing and reflection properties were good (page 40); and in comparison, the comparator was chipped and peeled, and had poor performance after testing (page 41). Pages 41 et seq. provide testing of additional “shaped” composition layers according to the present invention which were fabricated with different constituents or which include different manufacturing processes, and demonstrate a variety of materials and procedures can be practiced within the scope of the present invention.

In contrast, the Goto reference is directed to a glass-ceramic substrate which can be used, for example as a light filter. Goto does not teach or suggest having a composition layer with a protrusion or groove surface profile, as is required in amended claim 1. Rather, Goto describes a substrate material having certain preferred properties on which certain ceramics can be coated to prepare a light filter. Reference is made to the paragraph bridging columns 9 and 10 of Goto where it is demonstrated that a flat disk shaped glass ceramic material is manufactured (note the reference to lapping and polishing operations). Column 10, line 49, explains that the glass ceramic substrates are subsequently sputter coated with a multilayer film to produce a light filter. Further, claim 1 of Goto is restricted to a glass ceramic used for a light filter which includes certain ratios of alumina and lithium oxide, and claim 12 contemplates a substrate like in claim 1 coated with a multi-layer film.

At no point does Goto suggest or show forming protrusions or grooves in a surface of the glass ceramic substrate. Further, if the Goto methodology were used, all that would result

is a glass ceramic disk from which it would not be possible to, for example, to form protrusions or grooves or precise and repeatable characteristics. Note that the present invention creates the protrusions and grooves in a molding operation after degassing the material which eventually forms the composition layer. If one started with hardened glass material such as that contemplated by Goto, and then tried to shape the material through cutting operations, there would be chipping, etc. which would render the device unsuited for micro lens array applications.

Moreover, the claimed invention contemplates a multilayer coating on the shaped surface of the solid composition layer. If one started with the Goto device, the ceramic coating would already be on the glass ceramic material, and any cutting operation would remove the coating at cut portions. It would be an impermissible hindsight reconstruction of Goto to conclude that shaping of the glass ceramic can occur before coating of the glass ceramic because (1) Goto describes no shaping operation whatsoever, and (2) Goto clearly contemplates coating the flat disk ceramic material (column 10).

In addition, claim 1 specifies that the solid composition layer is resin. Goto, by contrast, is directed to a glass material.

Finally, it should be understood that the solid composition layer of the present invention is formed by polymerization (addition type) of an otherwise liquid material that polymerizes on exposure to heat or radiant energy (e.g., UV). In contrast, the glass ceramic of Goto is formed by melting a number of ceramic oxides (see column 3). Thus, the composition layer of the present invention is materially different from the glass ceramic of Goto.

For the aforementioned reasons, it is respectfully submitted that one of ordinary skill in the art would not find it obvious to create the present invention set forth in claims 1-21 by consulting any combination of the cited references.

In view of the foregoing, it is respectfully requested that the application be reconsidered, that claims 1-21 and 32-33 be allowed, and that the application be passed to issue.

Serial No.: 10/630,925

M. Hori et al.

Page 16

Should the Examiner find the application to be other than in condition for allowance, the Examiner is requested to contact the undersigned at the local telephone number listed below to discuss any other changes deemed necessary in a telephonic or personal interview.

A provisional petition is hereby made for any extension of time necessary for the continued pendency during the life of this application. Please charge any fees for such provisional petition and any deficiencies in fees and credit any overpayment of fees to Attorney's Deposit Account No. 50-2041 (Whitham, Curtis & Christofferson).

Respectfully submitted,

A handwritten signature in black ink, appearing to read 'Michael E. Whitham', is written over a horizontal line.

Michael E. Whitham

Reg. No. 32,635

Whitham, Curtis & Christofferson, P. C.
11491 Sunset Hills Road, Suite 340
Reston, Virginia 20190

Customer Number: **30743**

(703) 787-9400